

Electoral Systems Guide Curriculum by Pavan Iyengar

Though “the majority of states in the world today describe themselves as democratic,”¹ the ways in which states implement democracy are highly heterogeneous. Differences manifest themselves not only in the constitutional structure of the government— whether parliamentary or presidential, for example— but also in matters as fundamental as how votes are counted (i.e., the electoral system). Electoral systems have large effects on a country’s political landscape, including determining the number of political parties/candidates that may be viable, which campaign strategies are optimal, and how power is distributed between various institutions and groups of people. The range of criteria that can be considered when comparing electoral systems makes it difficult to choose a system that is better than all others, and the fact that countries often use different electoral systems for different parts of their government² only complicates matters. Indeed, the UN affirms that “while democracies share common features, there is no single model of democracy”³ and declines to “promote any particular national or regional model.”⁴

Globally, regardless of electoral system, democracies are struggling with turns to political landscapes more hostile to minority populations and grassroots efforts.⁵ While this trend may be attributed to a general increase in nationalistic ideology, greater ease of spreading disinformation, a preference for populism in the face of economic uncertainty, or other sociopolitical factors,⁶ electoral causes (and solutions) should not be disregarded. Importantly, as shown later, electoral solutions can complement systems in place already: transient bodies may be convened by the existing institutions to achieve a specific goal. Certainly, knowledge of electoral systems is crucial for those interested in the establishment of new democratic regimes. Thus, the aspiring global citizen must seek to understand the range of electoral systems that are in use, as well as what options are available. To that end, this essay will 1) discuss several major electoral systems and where they have been implemented and 2) consider modern uses of sortition (a non-electoral method).

Criteria

A variety of criteria have been developed to compare and assess single-winner electoral systems. One requirement, called the Condorcet criterion, was devised by Marie Jean Antoine Nicolas Caritat. It states that the winner of an election with more than 2 candidates ought to be the candidate who would win a head-to-head election against every other candidate. Despite its seeming simplicity, devising an electoral method that is Condorcet consistent (always satisfies the Condorcet criterion) can be difficult— many methods in place today are not— and methods that are Condorcet consistent can produce other counterintuitive results. It can be shown, for example,

¹ United Nations Secretary General. (2009). *Guidance Note on Democracy*. United Nations Digital Library. <https://digitallibrary.un.org/record/677649?ln=en>

² *List of Electoral Systems by Country*. (2022, December 19). In *Wikipedia*. https://en.wikipedia.org/wiki/List_of_electoral_systems_by_country

³ United Nations Secretary General. *Guidance Note on Democracy*.

⁴ *Ibid.*

⁵ Csaky, Z. (2021). *The Antidemocratic Turn*. Freedom House. <https://freedomhouse.org/report/nations-transit/2021/antidemocratic-turn>

⁶ Fisher, M. (2022, August 19). How Democracy is Under Threat Across the Globe. *The New York Times*. <https://www.nytimes.com/2022/08/19/world/democracy-threat.html>

that Condorcet consistent methods cannot be monotonic (a monotonic method satisfies the criterion that a voter who ranks a candidate higher should not be able to cause that candidate to lose). Similarly, Condorcet consistent methods might (depending on the number of voters and candidates) also not satisfy the participation criterion, which says a voter should not be able to help their preferred candidate by abstaining. In some situations, a Condorcet winner may not exist.

Other methods of determining a winner exist. For example, the method devised by Jean-Charles de Borda considers not only the winner of each head-to-head election (as the Condorcet criterion does), but also the margin of victory. Unfortunately, these methods have their own shortcomings, and the debate over how best to choose a winner in an election with more than two candidates remains unsettled; a variety of normative arguments should be considered.⁷ As a final note, it may not matter whether a particular method *always* meets a certain criterion the probability of its failing that criterion is low.^{8,9}

First Past the Post (Plurality)

First Past the Post (FPP) is the easiest way to count votes: the person with the largest number of votes wins the election, whether or not that number constitutes a majority. Because of its simplicity, FPP is used to elect the national legislatures of many countries, including the US. In general, plurality-based electoral systems like FPP tend to favor the formation of a highly stable two-party system, as both voters and party leaders worry about vote-splitting¹⁰— an issue that indicates FPP is not Condorcet consistent. If elections are held across geographical districts, the system tends to favor candidates of large parties or those with a high density of support in a particular region over those from smaller, geographically diffuse parties.¹¹ Districts may also be redrawn to favor certain outcomes over others— for example, to help or hurt representation of a particular minority group.¹² Consequently, election results may sometimes be counterintuitive: In England, for example, parties have gained seats in Parliament even while losing share of votes cast, and vice versa.¹³ Such a resistance to the will of the people might be protective against populist or extremist movements¹⁴ which now threaten liberal democracies around the world.¹⁵ Nonetheless, counterintuitive outcomes have led many countries to seek electoral systems that deliver results that more closely reflect the preferences of the voters.

⁷ Edelman, P. H. (2014). The Myth of the Condorcet Winner. *Supreme Court Economic Review*, 22, 207-19. <https://www.journals.uchicago.edu/doi/pdf/10.1086/682019>

⁸ Lepelley, D., Chantreuil, F., & Berg, S. (1996). The Likelihood of Monotonicity Paradoxes in Run-off Elections. *Mathematical Social Sciences*, 33(3), 133-46. [https://doi.org/10.1016/0165-4896\(95\)00804-7](https://doi.org/10.1016/0165-4896(95)00804-7)

⁹ Landsman, T. (2017, January 6). *All RCV Elections in the Bay Area so far Have Produced Condorcet Winners*. Fair Vote. https://fairvote.org/every_rcv_election_in_the_bay_area_so_far_has_produced_condorcet_winners/

¹⁰ *Electoral Systems*. (n.d.). Ace Project. Retrieved December 19, 2022, from <https://aceproject.org/ace-en/topics/es/esd/esd01/esd01a/esd01a01>

¹¹ Ibid.

¹² Li, M., Royden, L. (2017, October 10). *Does the Anti-Gerrymandering Campaign Threaten Minority Voting Rights?* Brennan Center for Justice. <https://www.brennancenter.org/our-work/analysis-opinion/does-anti-gerrymandering-campaign-threaten-minority-voting-rights>

¹³ *First Past the Post*. (n.d.). Electoral Reform Society. Retrieved December 19, 2022, from <https://www.electoral-reform.org.uk/voting-systems/types-of-voting-system/first-past-the-post/>

¹⁴ Becher, M., Menéndez González, I., & Stegmueller, D. (2022). Proportional Representation and Right-Wing Populism: Evidence from Electoral System Change in Europe. *British Journal of Political Science*, 1-8. doi:10.1017/S0007123421000703

¹⁵ Galston, W. A. (2018, April 17). *The Populist Challenge to Liberal Democracy*. Brookings. Retrieved December 19, 2022, from <https://www.brookings.edu/research/the-populist-challenge-to-liberal-democracy/>

Instant Runoff (Ranked/Preferential)

Instant Runoff Voting (IRV) is more commonly known as Ranked-Choice, Preferential, and Alternative Vote in the US, UK, and Australia, respectively. Voters indicate not only their first choice for a position, but also their second (and possibly more) choices. If no candidate receives a majority in the first round, the candidate with the lowest support is eliminated, and their votes are reassigned to the remaining candidates. Like FPP, IRV is a winner-takes-all method, but it requires the winning candidate to eventually develop majority support as less popular candidates get eliminated and their votes transfer. The most-cited benefit of IRV is that it supports the viability of third parties by removing the fear of “wasting your vote;”¹⁶ still, spoiler effects have occurred and the extent to which third parties benefit from IRV is debated.^{17,18} IRV is also susceptible to failing the Condorcet, monotonicity, and participation criteria, though the probability of any of these failures occurring in a real election is debated.¹⁹ IRV is used to elect national legislators in Australia, Ireland, Papua New Guinea, and in some US states. Ireland and some US states also use IRV to elect the President.²⁰

Single Transferrable Vote (PR Ranked)

Unlike the systems listed above, Single Transferrable Vote (STV) is a proportional representation system used in contests that will have multiple winners. Mechanistically, it is similar to IRV in that voters rank their preferred candidates, candidates meeting a certain quota are deemed elected, and votes for eliminated candidates (the candidates that are least popular in a particular round) are transferred to other candidates. In STV, the quota required for election is usually determined by either the Droop or Hare formula, and the choice of formula has implications for the representation of smaller parties.²¹ Since STV seeks to minimize wasted votes while electing multiple candidates, it also features transfers of surplus votes, which are votes a candidate receives above and beyond the required quota. There are different methods by which surplus votes can be transferred. STV is not necessarily Condorcet consistent, though Condorcet consistent variants do exist.

STV is used in Australia to elect the national Senate and other local positions, in Ireland to elect the lower house of the Irish legislature, and in Malta. STV is meant to approximate proportional representation, but majority reversals (when one party wins a majority of votes but does not win the election) can occur. When this occurred in Malta in 1981, it resulted in a constitutional crisis.²² STV is also notable as a proportional representation system that allows voters to cross party lines if they prefer. Thus, STV produces two results: 1) “minor centrist parties benefit ... and minor

¹⁶ Sundle, A. (2022). *Global Ranking of Electoral Systems*. Citizen Network. Retrieved December 20, 2022, from <https://citizen-network.org/library/global-ranking-of-electoral-systems.html>

¹⁷ Travis, A. (2010, May 10). *Electoral Reform: Alternative Vote System Would Have Had Minimal Impact on Outcome of General Election*. The Guardian. <https://www.theguardian.com/politics/2010/may/10/alternative-vote-minimal-impact-general-election>

¹⁸ *IRV Degrades to Plurality*. (n.d.). The Center for Election Science. Retrieved December 20, 2022, from <https://electionscience.org/library/irv-degrades-to-plurality/>

¹⁹ Landsman

²⁰ *Instant-runoff Voting*. (2022, December 18). In *Wikipedia*. https://en.wikipedia.org/wiki/Instant-runoff_voting#Global_use

²¹ Difford, D. (2021, August 10). *Hare vs Droop: How to Set the Quota Under STV*. Electoral Reform Society. Retrieved December 19, 2022, from <https://www.electoral-reform.org.uk/finding-the-finish-line-how-to-set-the-quota-under-stv/>

²² Bezzina, F., & Buhagiar, A. (2011). STV 4+: a proportional system for Malta’s electoral process. Voting matters, 1. <http://www.mcdougall.org.uk/voting-matters/ISSUE28/I28P1.pdf>

radical parties are penalized” and 2) there is a tendency to limit the influence of political parties overall.²³

Party List PR

Party List proportional representation differs from STV in that voters select a party for election rather than individual candidates. Seats are apportioned to the parties based on their share of the votes; usually there is a threshold of support, below which a party will not receive any seats. In closed-list systems, voters have no say in which candidates a party uses to fill their seats. Open-list systems allow voters to indicate preference for certain candidates of a party and, if support for a candidate meets a particular quota (usually a percentage of the party threshold,²⁴ or a percentage of the party’s total votes), the party must guarantee them a seat. A large number of countries in South America and Eastern Europe, and several in Africa, use some form of Party List voting. The criticisms of the Party List system are the same as for most proportional representation systems, including STV. Namely, they can lead to a fragmentation of the party system that necessitates “coalition governments, which in turn lead to legislative gridlock.”²⁵ Similarly, they can provide more room for extremist parties, while also making it harder to remove parties from power. In general, how well a Party List (or other proportional representation) system behaves is a function of both the formula used for apportionment and the number of representatives that can be elected to each district (district magnitude);²⁶ links have also been found between district magnitude, list type, and propensity for corruption.²⁷ Party List systems are particularly good at getting diverse representation across ethnic groups and genders, as parties have an incentive to deliver candidate lists that “appeal to a whole spectrum of voters’ interests.”²⁸

Sortition

The final section turns to Sortition, a non-electoral method that involves filling seats by random selection from the population. Historically used to populate the government of Athens in ancient Greece until it fell out of fashion during the Enlightenment, the virtue of using sortition to select a government has been long debated. Opponents question the competency (or interest) of randomly selected representatives²⁹ and whether an unelected body can claim legitimacy.³⁰ Proponents claim that sortition increases descriptive representation and prevents corruption,³¹ and that it improves dialogue.³² A variety of proposals exist, ranging from those that convene transient citizens’ bodies

²³ Britannica. (n.d.). Single Transferable Vote. In *Britannica*. Retrieved December 20, 2022, from <https://www.britannica.com/topic/single-transferable-vote>

²⁴ *Indonesia Electoral System*. (n.d.). Indonesian Inter-Parliamentary Union. Retrieved December 20, 2022, from http://archive.ipu.org/parline-e/reports/2147_B.htm

²⁵ *Electoral Systems*. Ace Project.

²⁶ *Ibid*.

²⁷ Chang E. C., & Golden, M. A. (2007). Electoral Systems, District Magnitude and Corruption. *British Journal of Political Science*, 37(1), 115–137. <http://www.jstor.org/stable/4497282>

²⁸ *Electoral Systems*. Ace Project.

²⁹ David, E. (2021) Selection by Lot and Democracy: New Trend, Ancient Model. *Advances in Historical Studies*, 10, 7-20. doi: 10.4236/ahs.2021.101002.

³⁰ Lafont, C. (2015), Deliberation, Participation & Democratic Legitimacy. *J Polit Philos*, 23: 40-63. <https://doi.org/10.1111/jopp.12031>

³¹ Delannoi, G., Dowlen, O., & Stone, P. (2013, July). The Lottery as a Democratic Institution. *The Policy Institute*. https://www.tcd.ie/policy-institute/assets/pdf/Studies_Policy_28_web.pdf

³² Gurerrero, A. (2021). The Epistemic Pathologies of Elections and the Epistemic Promise of Lottocracy. In Edenberg, E., & Hannon, M, *Political Epistemology* (156-79). Oxford. <https://doi.org/10.1093/oso/9780192893338.003.0010>

to advise elected bodies to those that advocate for the replacement of elected bodies with sortition to bring about a “non-electoral representative democracy.”³³ While used frequently for the important function of selecting jurors, the use of sortition for legislative functions has been limited. Carole Pateman³⁴ describes well-known examples of citizens’ assemblies in British Columbia, Ontario, and the Netherlands that were used to recommend electoral reforms to the sitting government; in the case of the Canadian assemblies, these recommendations were the subject of constitutional referendums. The proposals were not ultimately implemented, in part because the bar set by the elected legislatures for implementation required large supermajorities of support.

Pateman also discusses participatory budgeting, a practice originating in Brazil in which citizens take an active role in determining how city funds should be spent. Though participatory budgeting bodies need not use sortition, the Brazilian experience is promising for sortition advocates: There has been a high degree of participation, especially amongst poorer and marginalized communities, and projects have been successful in increasing access to resources in poor areas. Such “participatory budgeting” processes have since spread around the world. This suggests that citizens are both able and willing to effect change through these kinds of bodies.

³³ Bouricius T., (2013) “Democracy Through Multi-Body Sortition: Athenian Lessons for the Modern Day”, *Journal of Public Deliberation* 9(1). doi: <https://doi.org/10.16997/jdd.156>

³⁴ Pateman, C. (2012). APSA Presidential Address: Participatory Democracy Revisited. *Perspectives on Politics*, 10(1), 7–19. <http://www.jstor.org/stable/23327060>

Electoral Systems

Curriculum Guide

Objective: Students (grades 10+) will understand that a variety of electoral systems are in use throughout the world, that these systems have different advantages and disadvantages, and that these systems' ability to meet certain criteria (Condorcet consistency, monotonicity, participation, etc.) can inform voter and party strategies. Students will also gain an appreciation for how subtle alterations to an electoral system can create significant shifts in outcomes.

Assigned Readings:

- The above review (or similar)
- Pacuit, E. (2019). Voting Methods. In Zalta, E. N., *The Stanford Encyclopedia of Philosophy (Fall 2019 Edition)*. Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/cgi-bin/encyclopedia/archinfo.cgi?entry=voting-methods>
- News articles (or similar) advocating for/against a change in electoral system

Overview:

1. Ask students to name and explain the rationales behind the criteria they have read about.
2. Ask students whether any criterion seems more important than others (Which? Why?).
3. Lecture options: (materials not provided)
 - a. *Less abstract:* Overview of different electoral systems in use in different countries. Discuss how the country's electoral system might have affected its political landscape (How many parties are represented? To what extent?). Discuss whether the country has changed its electoral system in the past (Why?).
 - b. *More abstract:* Work through examples demonstrating how particular electoral methods fail certain criteria. Include discussion of how likely such failures are for a given system. Consider discussing criteria not previously included in this plan.
4. Activity options:
 - a. *Least abstract:* Have the class participate in mock elections (for example, which food(s) would you like at the next class?). The class should choose an electoral method (why did they choose it?) and execute upon it. If time permits, the ballot results can be reanalyzed using different electoral systems to demonstrate how outcomes change.
 - b. *Less abstract:* Provide a case study. For example, see the essay question below.
 - c. *More abstract:* Have students work through examples demonstrating how different electoral methods can fail certain criteria. For example, see the numbered questions below.

Electoral Systems

Activity

Consider the following scenario, in which candidates A, B, C, and D have run for a single position and have been ranked by 17 voters as shown:

Ballot	Number of Occurrences
ABCD	3
ACDB	4
CBDA	4
BCDA	6

1. Identify the Condorcet winner.

2. Identify the Borda winner.

3. Suppose there are 2 candidates, A and B, running for election in a contest that uses a Borda count. 80% of voters favor A over B, who has just 20% support. Suppose it is possible for B's party to nominate as many candidates (B_i) as it wants such that all voters prefer B to B_i .

a. How many such candidates should B's party nominate so that B wins the election? What does this imply about parties' nomination strategies in a Borda count contest?

b. In the island country of Nauru, an adjusted Borda count is used. In this version, candidates receive points equal to the inverse of their rank on a ballot (the first preference receives 1 point, second preference receives $\frac{1}{2}$ point, and so on).³⁵ Is this method susceptible to the same issue as the standard Borda count? Why or why not?

³⁵ *Electoral System for National Legislature- Nauru*. (n.d.). International Institute for Democracy and Electoral Assistance. Retrieved December 22, 2022, from <https://www.idea.int/answer/ans1303551031189881>

Instant Runoff Voting is a well-known electoral system. Consider the following scenarios using this system. The scenarios differ only in the last row.

	Ballots	
Number of Occurrences	Scenario 1	Scenario 2
9	BCA	BCA
7	ABC	ABC
6	CAB	CAB
3	CBA	BCA

4. Why are the results of Scenario 2 surprising relative to scenario 1? Which criterion is failed?

	Number of Occurrences	
Ballots	Scenario 1	Scenario 2
BCA	5	5
CBA	3	3
CAB	4	4
ABC	7	4

5. Why are the results of Scenario 2 surprising relative to scenario 1? Which criterion is failed?

Essay Question: Design an electoral system for a national government with a bicameral legislature and an independent executive. Consider whether the position should be filled by one or more people, how majority and minority interests can be balanced within the government, and the strategic implications (which criteria are satisfied or left unsatisfied?) of your chosen electoral system(s). Justify your arguments.

Electoral Systems

Activity Key

- 1) To determine the Condorcet winner: Count the number of ballots in which A is preferred over B and subtract the number of ballots in which B is preferred over A ($A \text{ v } B$). If $(A \text{ v } B) > 0$, A wins in a head-to-head election against B. Repeat for all other head-to-head combinations and choose the candidate that wins in all head-to-head matchups as the Condorcet winner. The Condorcet winner is B.
- 2) To determine the Borda winner: In a contest between n candidates, give candidate A n points for each ballot in which A is listed first, $n-1$ points for each ballot in which A is listed second, and so on. Repeat for all other candidates and choose the candidate with the most points as the winner. By assigning different values to each position on a ballot, the Borda count accounts for the margin of victory in a head-to-head contest. Variants of the Borda count assign values to each position on a ballot using different formulas. The Borda winner is C.
- 3) Supporters of A cast $A > B > B_i$ ballots, while supporters of B cast $B > B_i > A$ ballots. The Borda count assigns A $0.8 * (i + 1)$ points. Similarly, B gains $0.2 * (i + 1)$ points from the ballots of B's supporters. However, B also gains $0.8i$ points from the ballots of A's supporters. A and B break even when $i = 3$, so the party should nominate 4 others to guarantee B's victory. In general, nominating more candidates will allow B's party to overturn an even larger disadvantage: parties will simply seek to drown the field in as many candidates as possible.
The adjusted count would assign A $0.8 + 0.2 * (\frac{1}{i+2})$ points. B would gain $0.4 + 0.2$ points, with no dependence on i . The issue above does not occur, because the maximum number of points a candidate can earn does not increase with more candidates.
- 4) In scenario 1, B wins. In scenario 2, despite having gained support, B loses the election. This is a failure of monotonicity.
- 5) In scenario 1, C wins. In scenario 2, B wins. This means that those who cast an ABC ballot benefitted (they prefer B to C) by not voting. This is a failure of monotonicity called a no-show paradox.

Essay Question: Responses should provide reasonable justification for whether offices should be populated by one or more people, and select an electoral system suited for electing that number of officers. Responses should try to balance proportional representation with majoritarian systems and explain how party/voter strategies may be impacted by their choice of system.

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